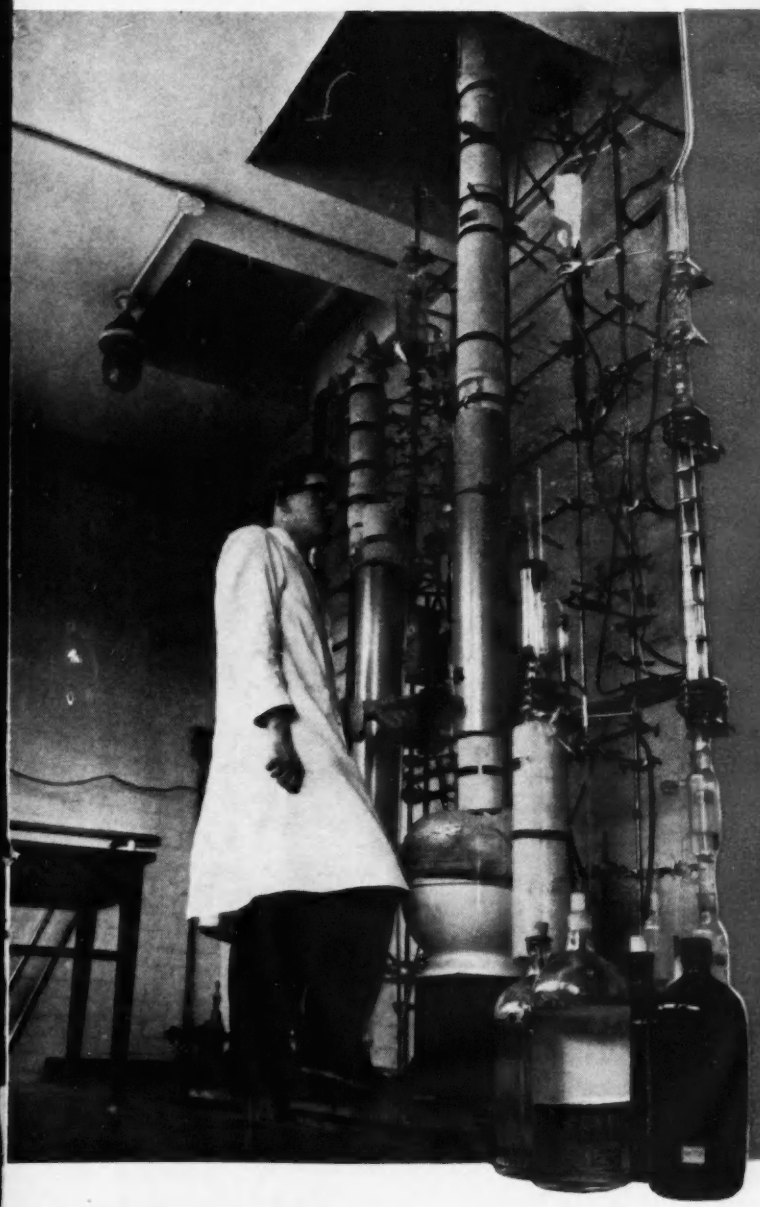
Chemical Age

VOL. 82 No. 2089

25 July 1959



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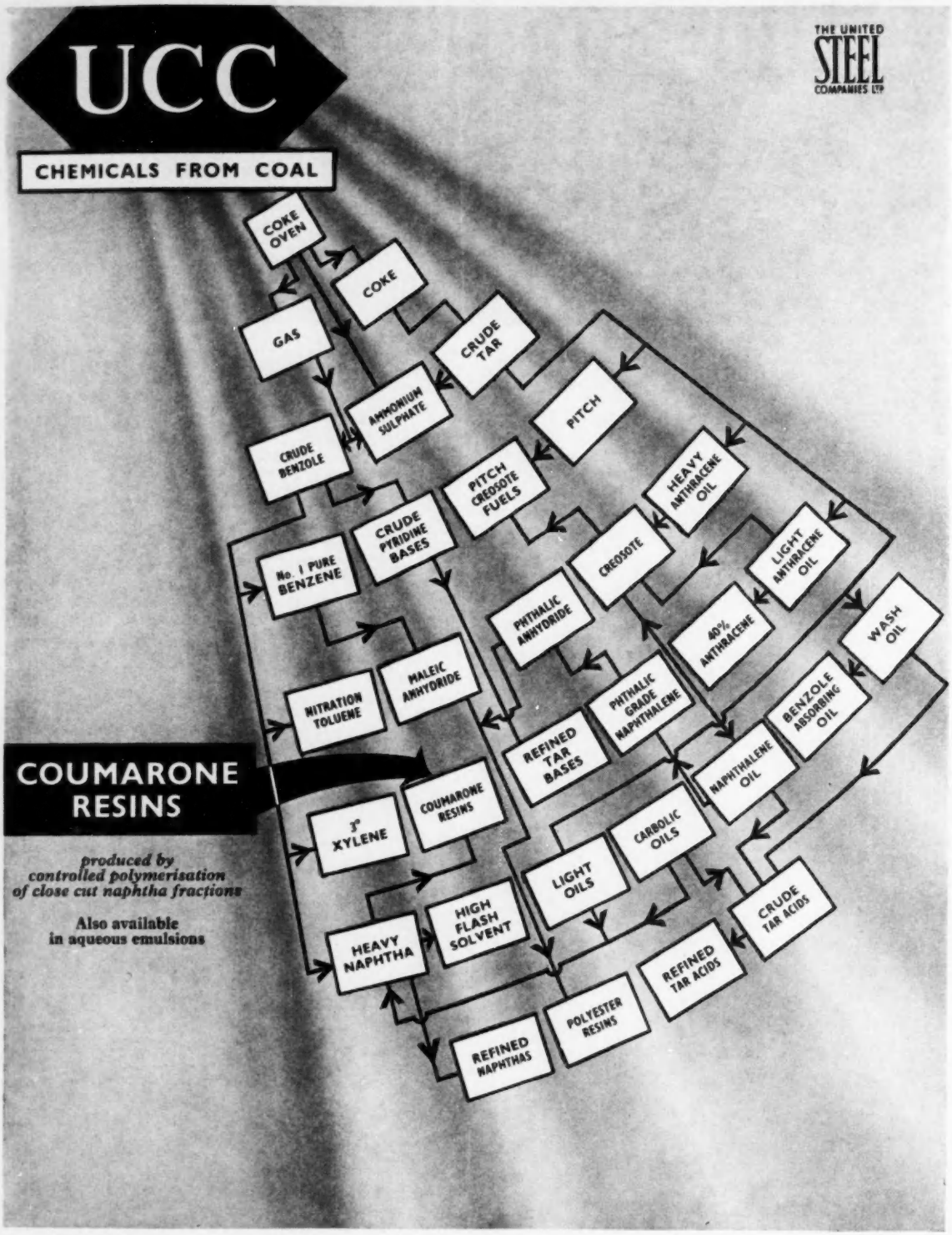

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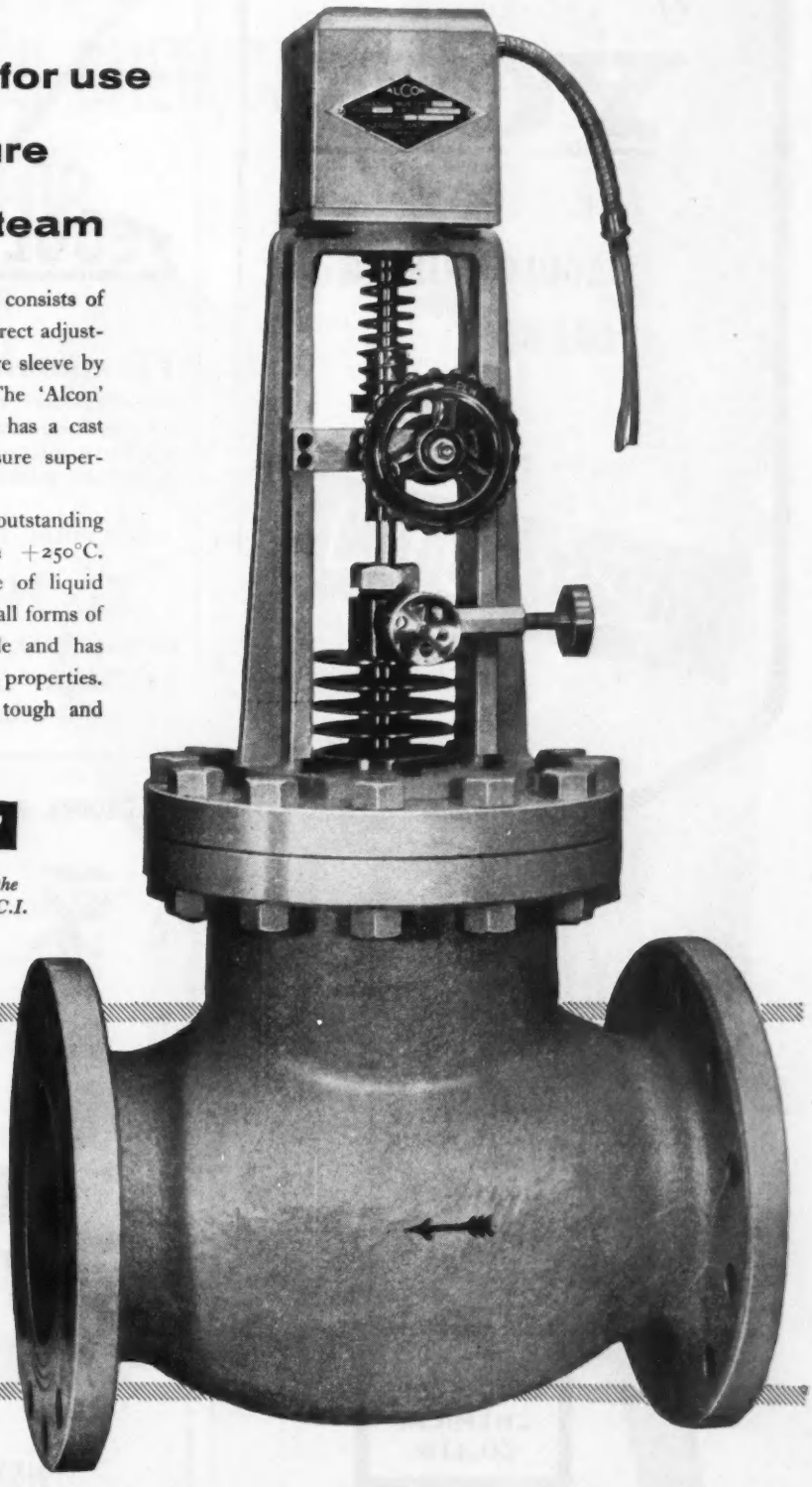

The gland on this 'Alcon' Type ACHW.15 hand reset valve made by Alexander Controls Ltd. contains chevrons made from 'Fluon' p.t.f.e by The Dunlop Rubber Co. Ltd. (General Rubber Goods Division) Cambridge Street, Manchester 1.

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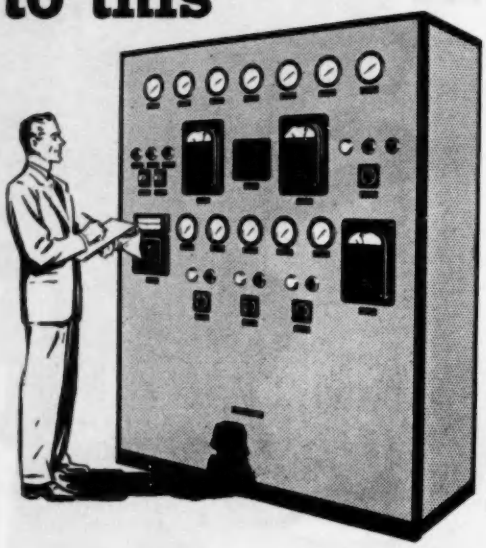

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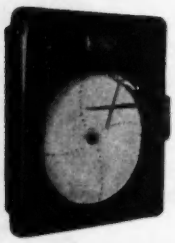
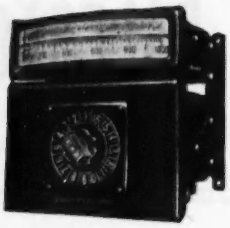


Disc chart pressure recorder



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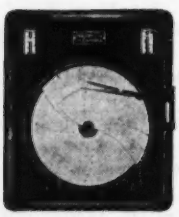

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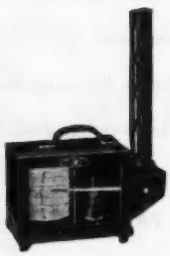

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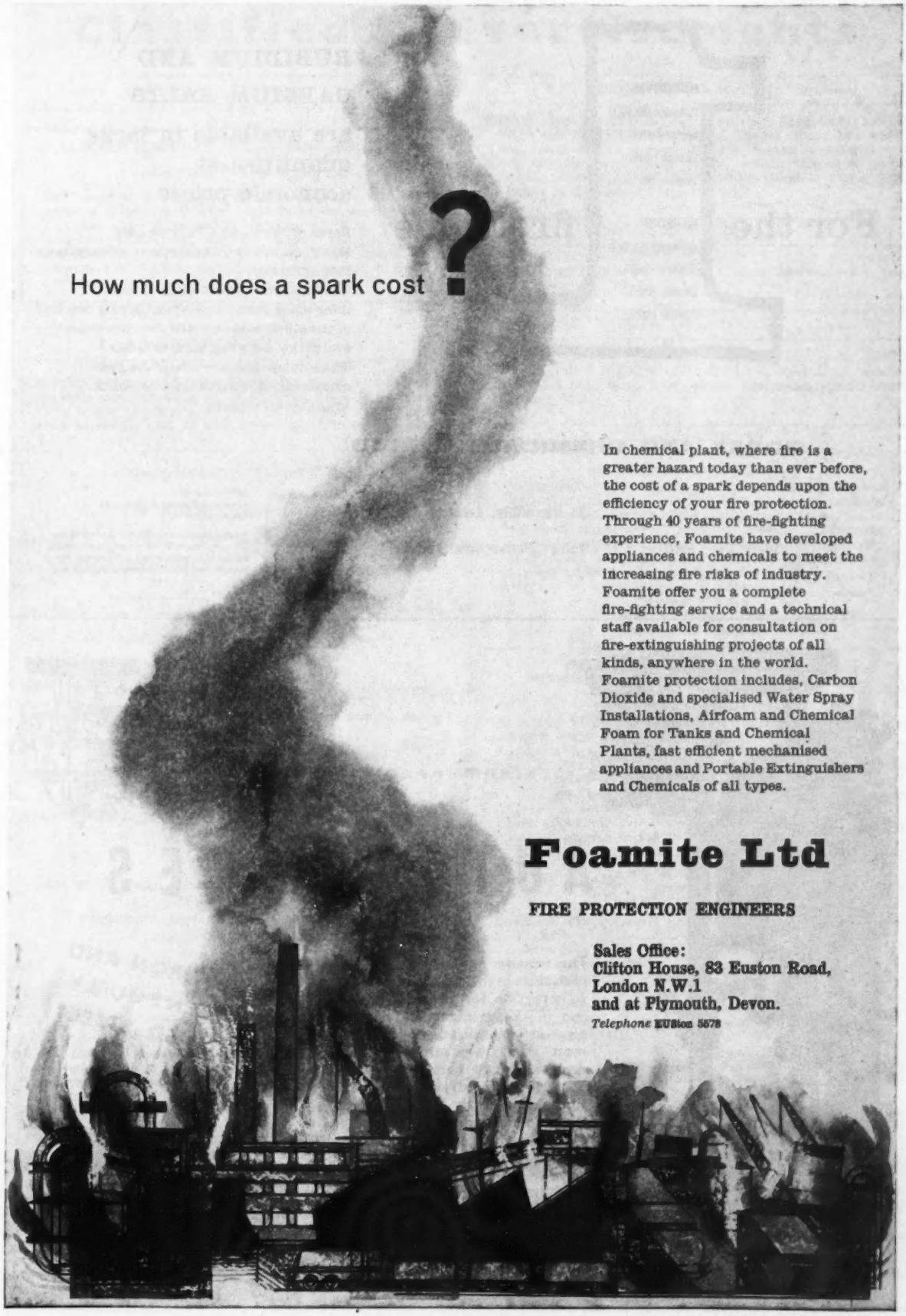

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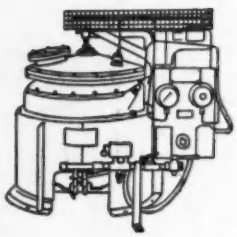

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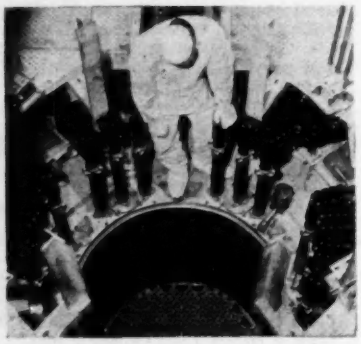
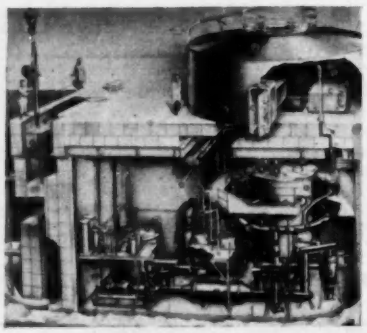
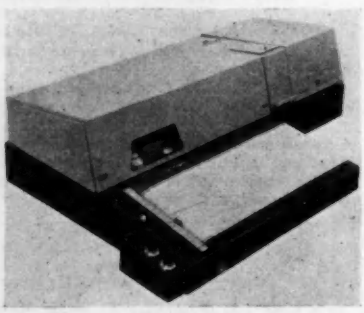
PHOTO NEWS OF THE WEEK



Looking into the core of the Zenith zero-energy reactor at the Winfrith Heath Atomic Energy Establishment which is almost completed. It is designed to carry out basic studies on high temperature graphite - moderated systems



A diagram of Zenith, which will be used to obtain data for the design of the 10 mW high-temperature gas-cooled reactor for the Dragon international experiment



Model IR-7 Prism-grating infra - red recording spectrophotometer from Beckman Instruments Inc. U.K. agents are A. Gallenkamp and Co. Ltd., Sun Street, London, E.C.2.

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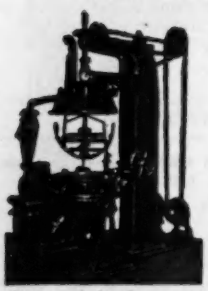

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Vol. 82 CHEMICAL AGE NEWSLETTER 25 July, 1959
No. 2089 P.65

The printing dispute, in which Chemical Age is not directly involved, continues to preclude normal publication. This emergency edition summarises the news of the week.

SEWAGE SLUDGE and TOXIC METALS

The danger of toxic metals from industry present in sewage sludge was stressed by Dr. W. Drawneek, Medical Officer of Health, Redditch Urban District Council, in a letter to The Times on 17 July. Redditch has been investigating a proposed experimental composting scheme and it has been found that apart from the small safety margin in lulling disease organisms, repeated analyses of the sludge have confirmed that use of the sludge for composting or continual agricultural use would be unwise in view of the high amount of toxic metals and iron present. Besides having adverse effects on plant and animal life, it might prove harmful by rendering phosphates in soil unavailable to plants. Redditch Council has therefore stopped all further issue of the sludge for agricultural use and has deferred indefinitely further consideration of provision of a composting plant.

Petrochemicals' Go Ahead With Carrington Project.

ERECTION of a new chimney stack at the Carrington, Cheshire, plant of Petrochemicals Ltd., has now been sanctioned by the Minister of Housing and Local Government. This means that plans for the multi-million pound development programme can be put into effect.

(The thirteenth annual report of the Lancashire and Merseyside Industrial Development Association states that Petrochemicals' new plant will cost nearly £2,000,000.)

Last year the local authorities refused permission to build the chimney. Petrochemicals Ltd. (an associate of Shell) appealed to the Minister and a public enquiry was held. Questions were subsequently asked in Parliament. (C.A. 27 Dec. 1959 p.1063 and 7 March 1959, p. 415.)

The Minister has now given permission on condition that the chimney is not less than 375 ft. high, 75 ft. higher than was originally planned.

It was stated at the enquiry that if all the boilers ultimately to be installed were in operation simultaneously and largely fired on high-sulphur fuel an emission of 36 tons of sulphur a day could be expected. The company point out, however, that this figure is a maximum total at some future date and assumes consumption of high-sulphur fuel oil. Up to 1965, they state, the total from the whole works, and not from this stack alone, should not exceed 14 tons a day and may reach only a quarter of this figure. The effect at ground level may be negligible. The company quote the Minister as stating that there is no proven technique for a chemical scrubbing device and add that there is not sufficient water at Carrington for the water-washing process.

NEW MERGER FOR I.C.I. DIVISION

I.C.I.'s Lime Division is to merge with Alkali Division on 1 January 1960 and will be known as the Buxton Lime Works of that division. The change is being made for administrative reasons and general policy regarding production and sales will not be changed. Mr. G.W. Talbot, at present a director (visiting) of the Alkali Division, will become a full-time director and be responsible for lime affairs. Mr. F. C.Covill and Mr. C.S. Hall will be appointed local division directors.

The Lime Division employs over 1,100 people and produces nearly 4m. tons of limestone a year.

GOODLASS WALL AND LEAD. Benefits from a policy of diversification were stressed by Mr. R. L. H. Lancaster, chairman, at the annual general meeting of Goodlass Wall and Lead Industries, Ltd.

Expenditure on a high level continues to be necessary in the field of research and development. Research on longer term projects has been increased and among these are new media for surface coatings, high purity metals for the electronics industry, ceramics with special dielectric and other properties and new products for shielding against radioactivity.

The range of products manufactured by the Newcastle-upon-Tyne division is being increased and the tonnage of special chemicals for the plastics industry and lithium increased further during the last year.

HYCAR NITRILE RUBBER In describing the polymerisation process, (para.4) for Hycar nitrile rubber (C.A. last week p.48) a sentence was omitted. In line 14 the sentence beginning "For hot rubber" should have read "For hot rubbers a temperature of 35°C is used, water being used for cooling of the reaction. For cold rubbers a temperature of 5°C is employed, cooling being effected by refrigerated $CaCl_2$ solution at -10°C."

CHANGES IN C.A. LIST OF BRITISH CHEMICAL PRICES.

Since the last list of chemical prices was published (30 May p. 905) the following changes have taken place.

Antimony Sulphide. Per lb., d/d U.K. in min. 1-ton lots; crimson 5s. -5.5½d. d/d golden, 3.3¼d. - 4.8½d. d/d per lb.

Borax. Ton lots, in hessian sacks c.p. Tech., anhyd., £70; gran., £46. cryst., £50.10s; powder, £51.10s. extra fine powder £52.10 BP, gran. £55.10s. cryst. £59.10s powder £59.10s; extra fine powder £60.10s. All grades except cryst. in 6-ply bags, £1.less.

Boric Acid. Ton lots in hessian sacks, c.p. Tech., gran., £78.10s; cryst. £87. powder £84.10s; extra fine powder £86; BP gran., £91; cryst. £96.10s; extra fine powder, £98.10s. All grades in 6-ply paper bags, £1. less.

Copper sulphate. F.o.b., less 2% in 2-cwt. bags, £74.10s.

Glycerine. Chem. pure, double distilled 1.2627 s.g., per cwt., in 5cwt. drums for ann. purchases over 5-ton lots, under 25 tons, £12.1.6d. Ref. tech. grade ind. 5s. per cwt. less than chem.pure.

Iodine. £28.11s. per ton. 10s6d. per lb. under 1 cwt.

Potassium Iodide £28.7.0. per ton 6s.10d. per lb. under 1 cwt.

Sodium Chlorate. 1-cwt. drums, c.p. station, in 4-ton lots, about £88.10s.

Sodium Iodide. Under 56 lb: 10s. a lb. 56lb. and over 9.9d/lb.

Tartaric Acid. Per cwt; 10 cwt. or more, £14.10s; 2-4 cwt. £14.14s. 5-9 cwt. £14.12s.

Zinc Oxide. Max. for 2-ton lots, d/d white seal, £99; green seal, £97; red seal, £94.

RUBBER CHEMICALS.

Carbon Black. 7¼d per lb. ex-works Swansea, 3-ton lots and over. Under 3 tons but not less than 1 ton 7¾d.lb. ex-works, ex-store, London and Manchester.

COAL TAR PRODUCTS.

Xylole. Acc. to grade, in 1,000 - gal. lots, d/d London area in bulk, per gal., 5s. 10d. - 6s. 1d.

Mr. L. I. Pentecost and Mr. A. B. Inger have been elected directors of Hicking, Pentecost and Co.

ILFORD'S NUCLEAR EMULSION. Ilford Ltd., only manufacturers of special nuclear photographic emulsion for the measurement of cosmic radiation in the West are to supply 1,220 lb. for U.S. experiments to be carried out in the Pacific next January. Conducted by Prof. Schein, Chicago University, the tests involve the release of two balloons from an aircraft carrier to a height of 100,000 ft. Each will carry 660lb. of Ilford emulsion in special containers and the object will be to study heavy primary particles and the effects of disintegration when they strike the silver halide crystals contained in the emulsion. Each of the balloons will carry sufficient silver for about 1 m. 120 roll films.

This emulsion will be made up into stacks measuring 24in. by 18in. by 11½ in.thick. This thickness is required so that the direction of the particles can be recorded and to provide the opportunity for disintegration. The emulsion is a suspension of silver halide in gelatine; thickness varies according to use, ranging from 600 microns (each 'plate' takes about one week to produce) to 100 microns. Emulsion G.5 is most commonly used in sheets 0.6mm. thick, or 50 times thicker than normal coatings on film and containing about 150 times as much silver in the same area. Very few of the silver crystals are 'fixed' by the radiations and a high proportion of the silver is recoverable by electrolytic process.

Ilford do not process the emulsion that has been exposed to radiation (except for their own test purposes). Developing can be done with Amidal, which performs at low pH, and is carried out according to a temperature cycle, starting with a cold bath.

The special emulsion is produced in the company's factory at Ilford and passed to the laboratory for sensitising etc. Here, under chief emulsion chemist Mr. C. Waller, the various grades are produced on a batch basis. Polished glass plates are coated with emulsion and are then subjected to a drying process. Because the emulsion starts recording radiation from the moment it is made, production is left as late as possible to meet the requisite delivery date. Physicists who use the emulsion, either at heights - in balloons or in satellites - or in the large accellerators that produce high-energy beams at Berkeley, California, and Brookhaven, can distinguish between ground-level and high-altitude radiation.

Since they first produced nuclear emulsion in 1945 at the request of Professor Powell (Bristol University), Ilford have introduced new grades. Their G.5. grade was made available in 1949; now there is a series with different grain sizes; including G.5 - 0.27 mu. K - 0.20 mu; L - 0.15 mu (H.P.3. film for comparison is 1-3mu). Annual output is now about 500 litres.

I.C.I. - U.S. Platinum-Titanium Electrodes Agreement

IMPERIAL Chemical Industries Ltd. have signed agreements with Engelhard Industries Inc., New Jersey, U.S.A., covering the production and sale of platinum-titanium electrodes. Production of platinmum-titanium electrodes by I.C.I. is now well established. Engelhard will produce similar electrodes.

Use of the new electrode for the production of chemicals such as chlorine is likely to lead to increased operating efficiency and lower costs.

The electrodes are also used for cathodic protection of steel hulls of ships against corrosion as well as for bridges, metal piers and industrial plant. Considerable research is also being conducted into their use in electrodialysis, electro-descaling, electro-reduction and similar processes. The companies will institute a joint research programme.

STRONTIUM 90 IN FOOD FAR BELOW DANGER LEVEL

FROM a survey of human diet in the United Kingdom in 1958, it has been found that the average diet contained approximately 6 micro microcuries of strontium 90 per gramme of calcium. Although variations occurred in different parts of the country, dependent partly on rainfall, it is unlikely that any large section of the community received as much as 10 micro microcuries of strontium 90 per gramme of calcium. The average level in fact was one-sixth of the limit which in view of the Medical Research Council would require immediate consideration. (M.R.C. maximum permissible occupational level is a concentration in bone of not above 10 micro microcuries per gramme of calcium). These are the conclusions given in Report No. 1 of the Radiobiological Laboratory of the Agricultural Research Council just published. Title of the report is 'Strontium 90 in Human Diet in the United Kingdom. 1958' (H.M.S.O. London 4s. net).

Findings indicate that in certain areas the contents of a diet would possibly be in the neighbourhood of 23 micro microcuries/gm. Ca. Unusual dietary habits have also led to higher values, as in replacement of white bread by wholemeal bread which could cause the ratio of strontium 90 to calcium in an otherwise average diet to be raised by approximately 3 micro microcuries Sr 90/gm.Ca.

The survey shows that the ratio of the shorter-lived Sr 89 to Sr 90 in milk and vegetables during 1958 was considerably higher than in the cumulative deposit. In milk during the summer months the ratio was usually half or more of that in the current fall-out. It is concluded that contamination of diet depends largely on the quantity of Sr 90 deposited in the preceding one or two months. The level of Sr 90 in cereal grains is largely dependent on the quantity of fall-out which lodges directly on the growing plant.

Studies have shown that availability of Sr 90 to plants is considerably reduced when it is incorporated into the soil. Also Sr 90 present in upper layers of soil is generally more accessible for absorption by plants than that which has penetrated deeper. It is concluded, therefore, that the dominant factor which will determine the levels of Sr 90 in food in the near future will be the rate at which fall-out is deposited. Values cannot be predicted accurately, the report states, both because of incomplete understanding of metereological factors, and because the future situation will depend on the rate at which fission products are injected into the atmosphere. Some increase in the quantity of Sr 90 in diet during 1959 is considered possible because of the larger quantities of fission products produced by nuclear weapon trials during 1957-8 than in previous years.

With regard to soil factors, the quantity of calcium in soils in the U.K. is not considered of great importance. It is suggested, however, that in respect of dietetic factors, contamination of diets could be expected to depend largely on the rate of fall-out, while considerably greater differences in ratios of Sr 90 to calcium in diet could be brought about by variation in types of vegetable foods consumed or by variation in the extent to which flour is reinforced with chalk.

B.A. FILM PROGRAMME. Scientific film programme at the British Association annual meeting (2 to 9 September), includes 'Distillation' (I.C.I.); 'Catalytic reforming, 1, reforming reaction (B.P.); 'Report on research, 1. - flowing solids' (Esso Research); 'Radioisotopes in industry' (U.K.A.E.A.).

GROWING USE OF EDTA IN PAINT INDUSTRY

At the 12th Annual Symposium on Analytical Chemistry at Illinois Univ. C.A. Lucchesi of Sherwin-Williams Inc. opined that EDTA would be almost the only titrating agent necessary for the quality control of driers and pigments in the paint industry. This view is evidently widely held in the U.S.

Sherwin-Williams, Lucchesi states, is now using EDTA to determine the metal content of all its driers, (calcium, cobalt, lead, manganese and zinc salts of either naphthenic or octoic acid. Against the present use of the flame-photometric method is that, while it is a valuable improvement over the old metal ion determination techniques, it involves cost and maintenance of flame equipment, and calibrated solutions have to be prepared and stored. Now with simple laboratory glassware and two standard solutions, EDTA can be used for determining all the 'drier' metals. The technique is also faster and cheaper. In the case of a plant drier with one metal combined with an organic acid, EDTA determination takes 10 minutes as against several hours using usual gravimetric procedure.

Using the right pH EDTA can determine a single metal in a complex mixture. Polyvalent metals can be titrated without interference from alkaline earths, e.g. at pH less than 5 or 6, while some elements can be tied up with complexing agents to produce more stable chelates than those based on EDTA - i.e. masking with a cyanide ion for Ni,Co,Zn,Cu, and Cd. Masking of Fe,Al, and Mn can be effected with triethanolamine.

To overcome the difficulty of end point determination with deeply coloured chelate solutions (e.g. conc. copper chelate solution) the latest U.S. approach is to use an indicator that fluoresces, the end point being found when fluorescence either stops or starts. Use is made of various fluorescent acid-base indicators to which a chelating group such as N - methylglycine has been attached. General Electric have already tested over 40 such indicators. One such available commercially is Calcium W.

The new fluorescent indicators are reported by Donald H. Wilkins of G.E. to have worked well in determining Cu, Co, Ni, Mn and Pd - and not only in relatively concentrated solutions. As the eye is more sensitive to changes in fluorescence than to small changes in colour, the method can be applied in analysing very dilute solutions of metals (e.g. Cu in 10^{-8}M concentration).

FERTILISER FREIGHT. June fertiliser charterings were on a meagre scale, states 'The Monthly Freight Review', shipments of azotics being particularly disappointing. Steady flow of ammonium sulphate to China almost dried up. Phosphates provided a few fixtures from N. Africa to near Continent at unchanged rates. Israel sought freight for a 10,000 ton cargo from Eilath to Japan, who also took two cargoes of pebble from Florida, one at $8.50 per ton, the other at $2 less. Pyrites chartering was 'in the doldrums'. Sulphur was a little more lively with two ships booked for full cargoes from U.S. Gulf to U.K. at 2s.6d./ton below the May figure.

TRADE WASTE COURSE. Birmingham University has arranged for a course on river pollution, sewage disposal and trade waste treatment to be held on 4-8 January and continued on 4-8 April, in co-operation with the Institute of Sewage Purification. Details from R.F. Wills, Civil Engineering Department, The University of Birmingham, Birmingham, 15.

HARD WATER SUPPLIES PROCESS LIME NEEDS.

UNIQUE SOURCE OF LIME Development of a novel system has led to hard water supplying process lime needs. The U.S. company, Buckeye Cellulose Corp., have grafted on to a standard alkaline pumping lime cycle a unique source of make-up lime. Instead of purchasing some 50 tons per day of lime required by their water softeners and pulp-liquor causticising circuit, Buckeye convert sludge produced in the softeners to usable chemical lime. The sludge is first purified by centrifugal classification. The purged sludge is then calcined together with washed lime mud from the pulp-mill causticising system. Lime is obtained from the kiln sufficiently pure and active for use in water softening and for make-up of loss in the causticising circuit.

Thus lime needs are fulfilled by utilising lime content in intake water, saving, it is stated, up to £5,000 a month. Also, the company expects to earn £1,000 a month from sales of surplus lime. The process, of course, eliminates discharge of waste lime sludge.

Hardness of the water used by Buckeye is reduced from over 220 p.p.m. to 80 p.p.m., producing 100 tons a day of sludge. About 30% of the water receives further treatment in anion, carbon, and sodium zeolite exchanges to reduce hardness to under 2 p.p.m.

Key to the recovery process is the sludge refining which removes some magnesium, iron and aluminium compounds prior to calcining. Purging is essential otherwise each successive re-use of recovered lime would increase the magnesium level in the lime. Centrifuging purges about 60% of the iron from the sludge.

ENJAY BUTYL RUBBER. Six further information sheets on Enjay Butyl rubber grades are now available from Chemicals Dept., Esso Petroleum Co., 50 Stratton St., London, W.1. No. 1. Enjay Butyl Radiator Hose: formulation of resistant-to-rust-inhibitor-solutions types; No. 2. Improved Wire Insulation Systems: method of improving physical properties of quinoid-cured compounds without sacrifice of electrical strength; No. 3. Butyl Rubber Self-curing Cements; formulation, together with adhesion values to various polymers in sheet or proofed form (best on GMF/P602/cure; No. 4. Enjay Caulking and Sealing Compounds; two compounds, one black and one white manila, cost, ¢/lb. 4.13 and 4.9¢ respectively; No. 5 Enjay White Floor Mats; formulation and physical properties - cost is about 7½d/lb; No. 6. Open Cell Sponge: low cost compound recommended for rug underlay - cost is about 7½d./lb. in light colours.

ONAZOTE INSULATION. Two major insulation projects with Ozanote, expanded ebonite with a closed-cell construction made by Expander Rubber Co. Ltd., Croydon, were the 2,000-ton ammonia storage sphere for Fisons Ltd. at Stanford-le-Hope and at Esso Refinery, Fawley. Here the insulated plant comprises cold vessels, storage tanks and heat exchangers for butadiene extractor units, and several miles of pipelines. Temperature range is from -200°F to 100°F; Onazote of from 1 in. thick to 6 in. thick was used. Onazote was chosen for the ammonia sphere because of its lightness and greater resistance to moisture penetration than cork.

VINYL SWEDISH TIE-UP. Skanska Attikfabriken AB, Perstorp, have built a plant for polyvinyl acetate in co-operation with Vinyl Products Ltd., Carshalton, Surrey. Since May 10 men per shift have been producing p.v.a. at an annual rate of 2,500 tons. Capacity can be extended if necessary.

TRADE NEWS

All-Purpose P.T.F.E. Hose. PTFE flexible piping is offered by William Rose Ltd., Lockfield Avenue, Brimsdown, Middlesex, at prices which they state are in most cases lower than stainless steel tube, seamless metallic hoses or special-duty rubber flexibles. Sulphuric, nitric and other acids can be carried safely and an infinite range of fluids can be carried by the same hose.

Polypenco Nylon. A brochure published by Polypenco Ltd., 68 Tewin Road, Welwyn Garden City, describes their nylon, which is produced in rod, strip, plate, tubing and tubular bar forms.

Offices for United Glass. New offices for the Scottish Division of United Glass Ltd. were opened at Bridge of Allan, Stirlingshire, on Monday, 20 July.

Works Holiday. British Moulded Plastics Ltd. will close their factory at Walthamstow Avenue from Friday 24 July to Monday 10 August. Their Swindon works are closed from Monday 20 July to Tuesday 4 August.

New Address. Chemicals Trading Co. Ltd. have moved to Cree House, 18-20 Creechurch Lane, London E.C.3. (Tel. Avenue 5488).

Houdry Brochure. An 8-page 2-colour brochure depicts contributions to progress in the petroleum, petro-chemical and chemical industries by the Houdry Process corp., Philadelphia,Pa., and details the firm's processes, products and services. Processes include Houdriflow and Houdresid for catalytic cracking, Iso-Plus and Houdriform for catalytic reforming and dehydrogenation for olefin and diolefin production.

PEOPLE IN THE NEWS

Quickfit and Quartz Ltd. have appointed Mr. Walter Zuber, B.Sc., to the new position of overseas sales representative. Mr. Zuber graduated in glass technology at Sheffield and after experience on the Continent worked for Chance Bros. Ltd. before joining the Morgan Crucible Co. as process control and development manager.

The Printing, Packaging and Allied Trades Research Association has elected Sir Denis Truscott president. Mr. George Scott was elected chairman, Mr. R.M.C. Nunneley senior vice-chairman and Mr. H. John Jarrold junior vice-chairman.

Mr. R. H. Foster has been appointed managing director of M. & W. Grazebrook, Ltd., Dudley, Worcs. He was formerly a senior executive with British Petroleum Co. Ltd., in London and later director and general manager of a group of general engineering subsidiaries of United Gas Industries,Ltd.

British Insulated Callender's Construction Co. Ltd. have appointed Mr. J. N. Gibson, Mr. J.R. McDonald, and Mr. D. M. H. Rooney, executive directors.

Dr. Robert Q. Parks. has been promoted general manager of Grace Chemical Division, W. R.Grace and Co. Mr. Frank J. Ronan succeeds Dr. Parks as general sales manager.

Dr. G. W. A. Fowles. has been appointed a senior lecturer in chemistry at Southampton University.

OBITUARY. Captain R. C. Kelly has died, aged 78. He had been chairman of Crookes Laboratories for 38 years.

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be extended if necessary.

COMMERCIAL NEWS

BRITISH TAR PRODUCTS. Final dividend of 8¾% for British Tar Products makes 13¾% on a doubled capital for the year ended 31 March, 1959. This is the same equivalent as previously, when, however, there was also a 5% tax-free capital distribution. Trading profit fell sharply from £206,696 to £97,414 and after tax of £27,531 (£58,989), net profit is £39,254.

DISTILLERS CO. LTD. Consolidated profits of Distillers Co. Ltd. increased by £2.3.m. to £27.1.m. in the year ended 31 March 1959 and the dividend is raised from the equivalent of 10⅜% to 12½%, on the £78¾m. ordinary shares with a final of 8½%. Net profit attributable to the company has risen from £10,582,818 to £13,172,095.

Future capital requirements have again been reviewed and the directors state that having regard to the present programme and the phasing of the expenditure involved, it is considered unlikely that fresh capital will now be required on the scale previously envisaged and certainly not during the current year. It was thought last November that the development programme under consideration would make it necessary for the company to obtain additional finance up to £15m. in the course of the next two years.

GOODLASS WALL AND LEAD. Group profit for 1958 for Goodlass Wall and Lead Industries, Ltd. amounted to £3,452,364 before tax, an increase of some £415,000 over profit for 1957. Net profit was £1,650,394. (See also P.66).

GREEFF-CHEMICAL HOLDINGS. Final dividend of 20% is announced by Greeff-Chemical Holdings, to make 25% for 1958 against a previous distribution of 20% which included a 4% bonus. The 1957 interim was on £500,000 against the present £550,000 ordinary. Group profits of £218,634 compare with £180,163, subject to tax of £92,691 (£98,795).

I.B.E. Group net profits of I.B.E., formerly International Bitumen Emulsions, recovered from £25,199 to £32,367 in the year ended 31 March 1959, after charging £26,827 (£19,930) for tax. Dividend for the third successive year is 10% and absorbs £22,005.

MUREX LTD. Following the cut in their interim from 7½% to 5%, Murex metallurgists, etc., are maintaining the final of 10% for the year to 30 April 1959, making a total of 15% against 17½%. Group profits of £894,000 compare with £983,000, but after depreciation and substantially lower tax, net balance shows an increase from £291,000 to £334,000.

Trading continued to be difficult for the parent company. Expenditure on capital projects was at a reduced level and was met from current resources.

LAPORTE INDUSTRIES Results of the first three months of the current trading period for Laporte Industries Ltd., Mr. L.P. O'Brien, chairman, says, enables him to confirm that business was on a firmer basis in comparison with the previous year. Acquisition of Sheffield Chemical Co., James Wilkinson and Son and Glebe Mines (C.A.13 June, P.1006) which were profitable businesses, will bring the group into a new field of chemistry that is capable of expansion.

SCOTTISH INDUSTRIAL INDUSTRIES. Interim dividend of Scottish Agricultural Industries (I.C.I. controlled) is declared at 4% (3%) for year ending 30 Sept. 1959. In January a special interim of 2% was paid for 1958-9. Unaudited figures for eight months ended 31 May, show sales of £19m.(£18.2m.) and profit, before tax, of £1,385,000 (£1,197,000).

VISCOSE DEVELOPMENT CO. Interim dividend doubled to 6% on acc. 1959.

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NUCLEAR RADIATION RESISTANT RUBBER. A new rubber - adduct rubber - which resists nuclear radiation has been developed by Goodyear Tyre and Rubber Co. The new rubber is made by adding methyl mercaptan to polybutadiene or other diene rubbers. The mercaptan reacts with the polymer latex at 30°-60°C using a free-radical initiator, e.g. bis-azo-iso-butyronitrile.

According to Goodyear, adduct rubbers are resistant to oxygen, ozone and weathering, show low gas permeability and are more resistant to degradation by nuclear radiation than other elastomers. Development of this type of rubber has been initiated for use in construction of a nuclear-powered airship for the U.S. Navy. It is proposed that 'rubberised' Dacron fabrics would form the covering of the airship and could withstand exposures up to 100 m. rontgens. The rubbers are cured using the same method used for the base polymer.

QUEENSLAND FERTILISER SCHEME. Discussions have been taking place between the Queensland Government and six companies concerning a £A7m. to £A9 m. fertiliser industry for Central Queensland. It has been suggested that pyrites from Mount Morgan could be used. Companies participating in the discussion were: Mount Morgan, Ltd., ACF and Shirleys Fertilisers, Monsanto Chemicals (Aust.)., Shell Chemicals (Aust.), Swift and Co., and Fisons Chemicals Pty.

ICIANZ'S £A3½m. PROJECTS. More than £A3½m. was spent on construction work in 1958 by I.C.I. of Australia and New Zealand and their subsidiaries. Extensions were made to nearly all major plants. New projects and extensions in Australia completed included a new phthalic anhydride plant at Newcastle Chemical Co, extensions to the polythene plant and to the Visqueen factory; new hydrochloric acid plants at Botany and Yarraville; new nitric acid plant at Nobel and a plastics technical service laboratory at Ascot Vale. In New Zealand a new explosives magazine was set up and put into use at Waitawa.

GLASS-BAG FILTERS. To overcome the hot dust problem the Dracco Division of Fuller Co., Cleveland, Ohio, have developed glass-bag filters which can filter up to 600°F. Use is made of sonics, i.e. low-frequency vibrations, transmitted to bags at safe energy levels which cause no deflection, creasing or fatigue. To clean the filters the bags are relaxed by isolating the filter compartment of the main collector fan with control valves. A low-velocity fan promotes reverse air to collapse the bags, so that no shaking is required.

PHOSPHORIC ACID PROCESS. Shortly to undergo pilot tests by Mitsubishi Chemical, Mitsubishi Petrochemical and Tohoku Fertiliser in a $139,000 plant being built at Akita, Japan, is a new phosphoric acid process. Known as the tower process, it was developed by Professor Keiichi Murakami and Shoichiro Hori of Tohoku University. Claims made for the process, details of which are still secret, are that it will produce phosphoric acid at low cost, and with simpler equipment than conventional processes, and that it will yield high-grade gypsum as a by-product.

It is suggested by some that the process may involve counter-current treatment of phosphate rock to produce a weak acid solution. Rather than raise the acid concentration (a costly process) the product could be used directly in fertiliser manufacture and the by-product gypsum sold, thus giving economic advantages.

MONTECATINI's U.S. PLANT. Building is to start shortly at Neal, W.Va, near Huntingdon, of Montecatini's $10m. chemical plant. Plant design will be in the hands of Montecatini engineers, but U.S. contractors will carry out actual construction. Operation of the plant will be by the Montecatini subsidiary, Novamont Corp. Isotactic polypropylene and other polyolefins for making plastics, fibres, elastomers etc., will be produced. Initial capacity is estimated at slightly more than 10m. lb. a year.

LESS ITALIAN SULPHUR. In January - April 1959, 45,050 metric tons of sulphur was produced in Italy or about 18.8% less than the 55,488 tons produced during the first four months of 1958. During the same period, exports of sulphur totalled 13,852 tons or nearly 15% more than the 12,059 tons exported in Jan-April 1958.

SYNTHETIC FUEL IN AUSTRALIA. Small quantities of synthetic liquid petroleum are being produced from brown coal gas at the Highett laboratory of the Gas and Fuel Corporation of Victoria. The Fischer-Tropsch process is being used.

$2m. CARBON BLACK PLANT. Continental Carbon are planning a $2m. plus expansion programme to increase capacity at their carbon black plant at Lake Charles, La. U.S., from 45m. to 70m. lb a year of high abrasive carbon black. The plant is expected to be completed by the end of the year.

ION EXCHANGE POLYMERS. Development of a carbonaceous polymer by CSIRO workers, D.H. Weiss and R. McNeill is seen as an important step towards electrically regenerated ion exchangers. The new absorbent, a polymerised xanthene dye, is a P-type (charge carried by migrating plus charge) semi-conductor with specific resistance of about 10,000 ohm-cm. Semiconductivity can be related to the structure of the polymer. Synthesis is by heating a mixture of hydroquinone, pyromellitic anhydride, and phthalic anhydride to 250°C in presence of zinc chloride and in an inert atmosphere to produce the solid polymer. CSIRO'S work is suggested as a major step forward in the ion-exchange industry, since conventional products require costly chemical regeneration.

DOW'S NEW ACRYLIC PROCESS. At Dow Badische's Freeport, Texas, plant acrylic acid will be made by a direct process "new to the U.S. industry". The plant is scheduled for completion in December and production is expected to start in January. Acetylene will be obtained from the adjacent Dow Texas division. Some acid will be sold by Dow Badische, but the remainder will be used to make methyl, ethyl, butyl and other esters. (Dow Badische is jointly owned by Dow and BASF Overzee, a subsidiary of Badische Anilin-&-Soda-Fabrik.)

USE OF MODIFIED FLOUR. Products which may be used as thickening agents, adhesives and coatings and sizes for paper and textiles, have been produced by the U.S. Department of Agriculture by modifying wheat flour. The flour is heated with either ethylene oxide or propylene oxide and mixes readily with water to form a free-flowing paste. Satisfactory storage at a moisture content of 5% or less is claimed.

FATTY NITROGEN CHEMICALS. A broad new line of fatty nitrogen chemicals now available in production quantities from Chemical Products Division, Archer-Daniels, Midland, Minneapolis 2, Mich. U.S.A. have the trade name Adogens. They include primary, secondary and tertiary amines, quaternary ammonium compounds and amides. An ADM innovation is the creation of trifatty amines and other complex tertiaries through a novel process. The line also offers very long chain fatty nitrogen chemicals in the arachidyl and behenyl range.

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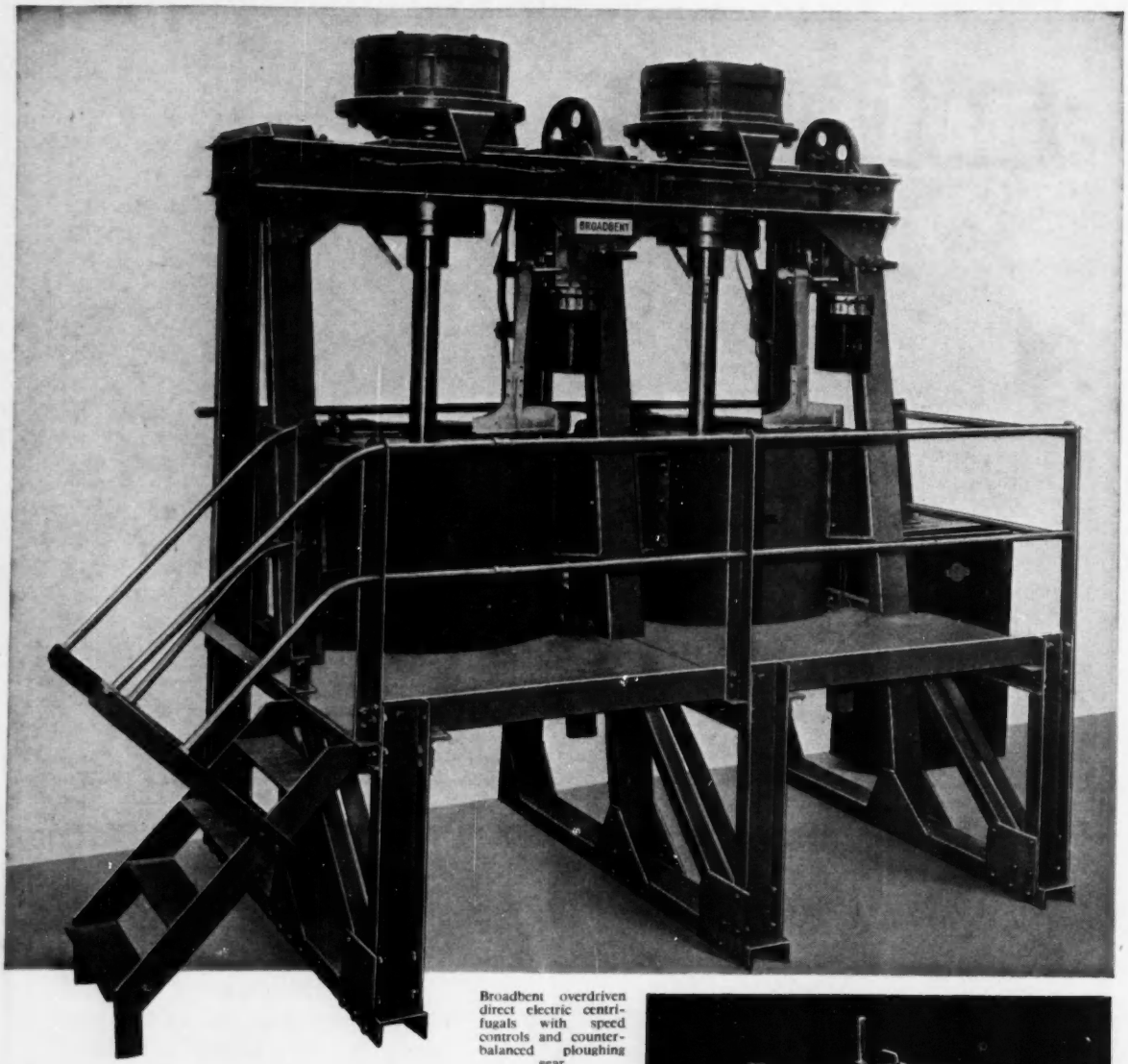

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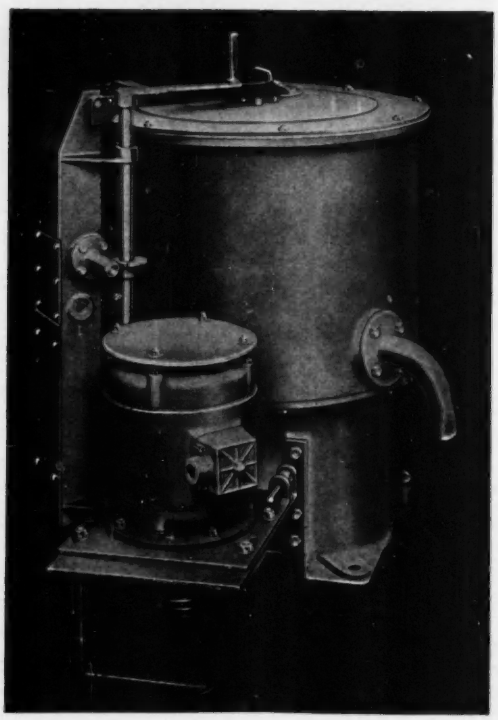

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